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Understanding the March and November 2024 Surge of Shiba Inu Cryptocurrency: A Behavioral Finance Perspective

Introduction

The cryptocurrency market is distinguished by its high volatility and potential for significant returns, often driven by factors beyond "fundamental" financial metrics. This makes it a fascinating domain to study investor behavior, particularly in the context of cryptocurrencies that lack intrinsic value or technological innovation. Among these, Shiba Inu (SHIB) stands out as a striking example. Despite its origins as a meme-based token, SHIB has demonstrated remarkable performance, oftentimes with higher returns than established cryptocurrencies like Bitcoin and Ethereum during peak periods. (Figure 1).

The performance of SHIB's prices raises an interesting question: how does a cryptocurrency with little foundational contributions and little technological advancements achieve such dramatic spikes in value? This paper investigates this intriguing phenomenon using behavioral finance concepts. It considers Fischer Black's Noise Trader Risk in Financial Markets and Bikhchandani, Hirshleifer, and Welch's A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades. These theories offer insight into behavioral finance factors, social dynamics, and investor behaviors in driving asset prices.

By using these theories as lenses combined with econometric tools like GARCH models and sentiment analysis through R programming, this research paper aims to contribute to the ongoing scholarly conversation about the behavioral aspect of cryptocurrency markets and their

deviation from traditional investment patterns. Utilizing these resources, the research argues that the initial actions of a few noise traders can catalyze a cascade, prompting uninformed participants to imitate their decisions, thereby magnifying volatility. While alternative explanations such as orchestrated pump-and-dump activities or sudden policy shifts could also be at play, this paper focuses on the role of behavioral triggers and sentiment-driven investment decisions and finds a correlation between the two elements.

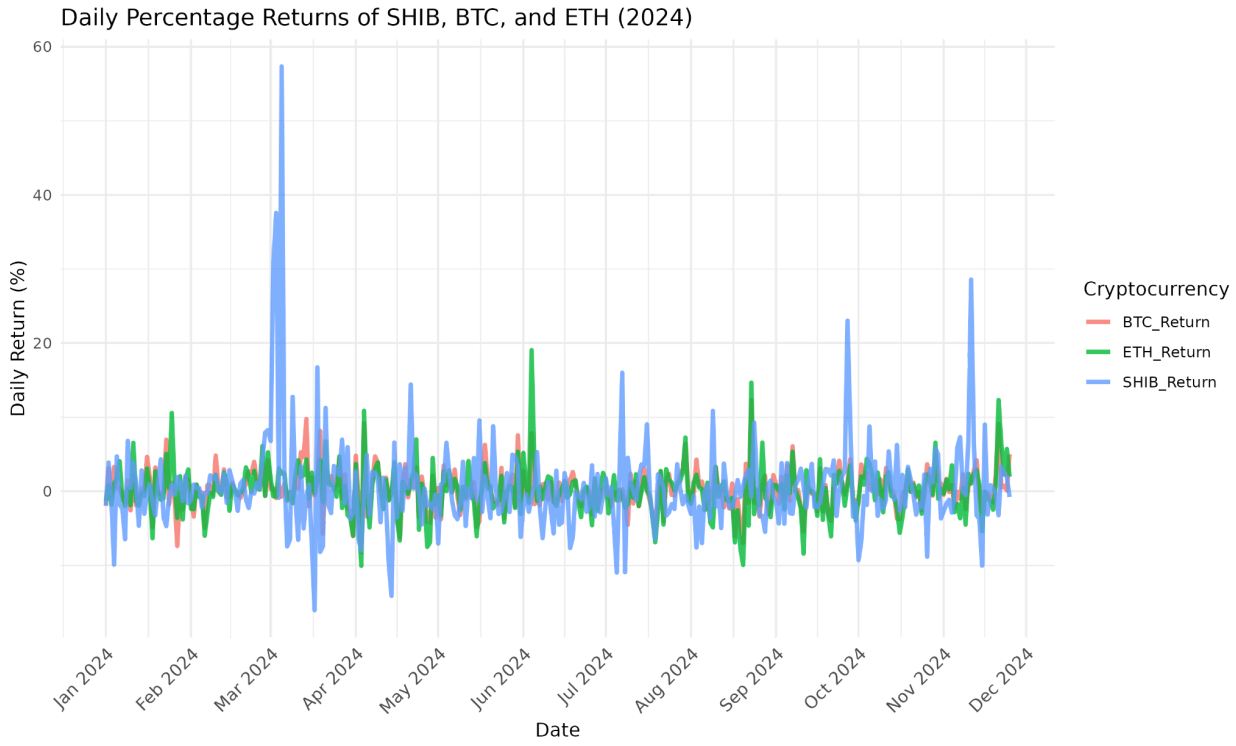

Figure 1: Figure 1 displays the daily percentage return of SHIB, ETH, and BTC from January 1st, 2024 to November 25th, 2024. To calculate the percentage return, I used the formula below. This figure displays how SHIB tends to have significantly higher returns compared to major cryptocurrencies such as BTC and ETH.

Daily price histories, trading volumes, and market capitalization from CoinGecko and graphs made using R Studio.

Noise Trader Risk

Fischer Black's Noise Trader Risk in Financial Markets introduces the concept of *noise traders*–investors who trade on erroneous or irrelevant information rather than fundamental values.[1] This theory introduces a robust framework for understanding how speculative behavior can create market inefficiencies.[2] The authors, Shleifer et al., who refer to Black's concept argue that "the unpredictability of noise traders' beliefs creates a risk in the price of the asset that deters rational arbitrageurs from aggressively betting against them".[3] In the case of cryptocurrency, the effect of noise trading is amplified because it is difficult to do fundamental analysis on tokens. Furthermore, one of the driving factors of meme coin cryptocurrency valuation is community sentiment and engagement.[4] This risk allows noise traders to sustain market anomalies, leading to deviations from intrinsic values.

In the context of SHIB and cryptocurrency in general, noise trader behavior is likely a significant driver of its extreme volatility. The majority of meme coin investors are retail traders, aligning with the high-risk, speculative nature of these assets. During the peak of the meme coin market in April 2024, retail investors held approximately 65.9% of total memecoin holdings, amounting to $567 million, compared to institutional investors, who accounted for only 34.1% or $293.7 million.[5] This dominance by retail traders demonstrates that memecoin cryptocurrencies are more prone to rapid buying or selling based on market hype rather than fundamental analysis. Such behavior would cause volatility and unpredictability of memecoin markets, reinforcing their appeal as speculative investments.

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[1] Shleifer and Summers, "Noise Trader Risk." p. 704
[2] Shleifer and Summers, "Noise Trader Risk." p. 704
[3] Shleifer and Summers, "Noise Trader Risk." p. 703
[4] Papadamou et al., "From HODL to MOON." Abstract
[5] Bybit, "How Institutions and Retail Are Shaping."

Shleifer's et al. framework explains how noise traders—investors acting on impulses—create market volatility by treating irrelevant signals as meaningful.[6] Their unpredictable behavior introduces a unique risk termed *noise trader risk* which deters rational arbitrageurs from fully correcting mispricing.[7] Considering noise trader risk helps visualize the effect noise traders have on the valuation of a stock. This dynamic leads to sustained price deviations from fundamental values and heightened volatility. Knowing this concept and then applying a GARCH model would help visualize the volatility of SHIB and reveal if there is a correlation between noise traders and the price of SHIB. Considering Black's concepts, I will use computer R programming to recreate a similar test. Combining the GARCH volatility model with sentiment analysis data scraped from Reddit, this paper will try to understand if there is a relation between *noise*—speculative information on Reddit—and volatility. For instance, during SHIB's price surges, one could investigate whether these movements coincide with periods of heightened engagement on social media platforms.

[6] Shleifer and Summers, "Noise Trader Risk." p. 706
[7] Shleifer and Summers, "Noise Trader Risk." p. 703

Data Collection and Preparation

To analyze SHIB's valuation, this study collected market data from CoinGecko, including daily price histories, trading volumes, and market capitalization. Sentiment data was sourced from Reddit using a Reddit app gateway key for scraping reddits posts, focusing on terms such as "SHIB," "Shiba Inu," "bullish," and "moon." These terms are indicative of investor sentiment and can help quantify the psychological drivers behind SHIB's price movements.[8] Other platforms were considered, however, most of them recently developed hefty paywalls such as X API. For the purposes of this study, Reddit is still a very active and relevant platform to use. Although an in-depth sentiment model was initially considered using libraries like syuzhet, I refrained from fully implementing it to avoid potential fallacies and biases inherent in basic natural language processing, ensuring the analysis remained straightforward and transparent.

[8] Smith, "Market Sentiment."

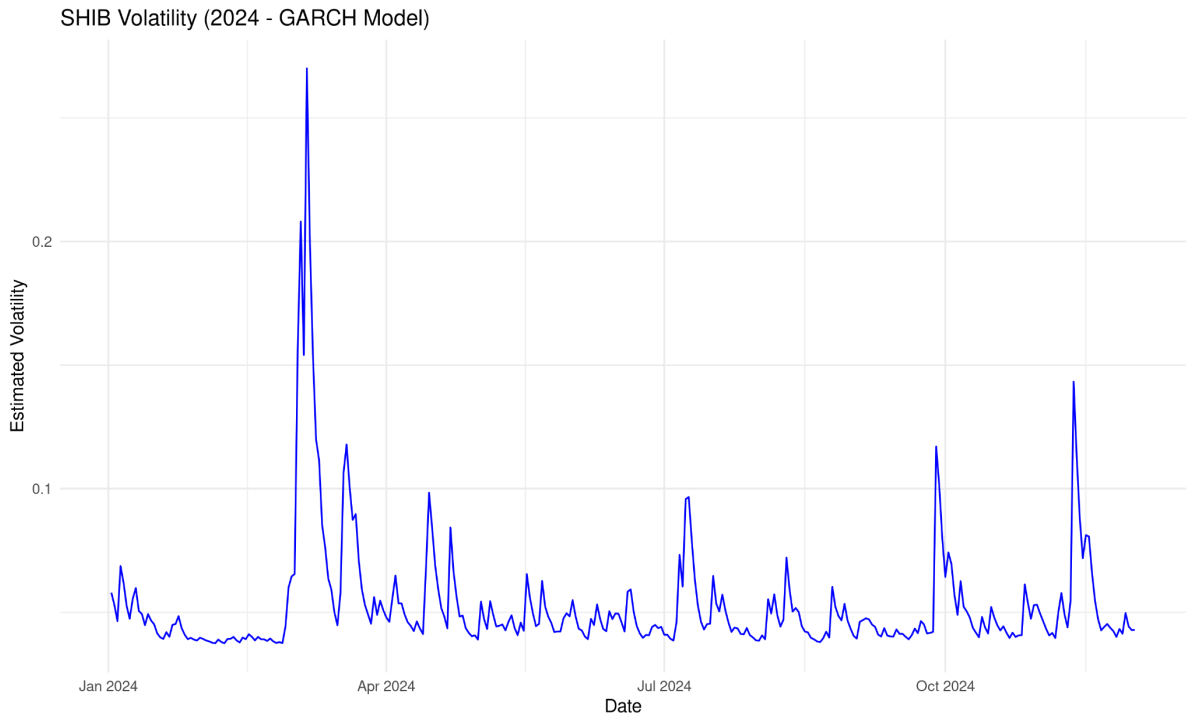

Figure 2: This chart displays the volatility of SHIB (Shiba Inu) cryptocurrency returns from January 1st, 2024, to December 31st, 2024, modeled using the GARCH (1,1) framework. The y-axis shows the conditional volatility, calculated as the standard deviation of daily returns, and the x-axis is time. This figure highlights periods of volatility with a significant spike in March-April 2024. The figure shows that SHIB experienced increased uncertainty during this period. The data shows that SHIB's market movements follow sharp periods of volatility, aligning with its reputation as a speculative and sentiment-driven asset.

Daily price histories, trading volumes, and market capitalization from CoinGecko and graphs made using R Studio.

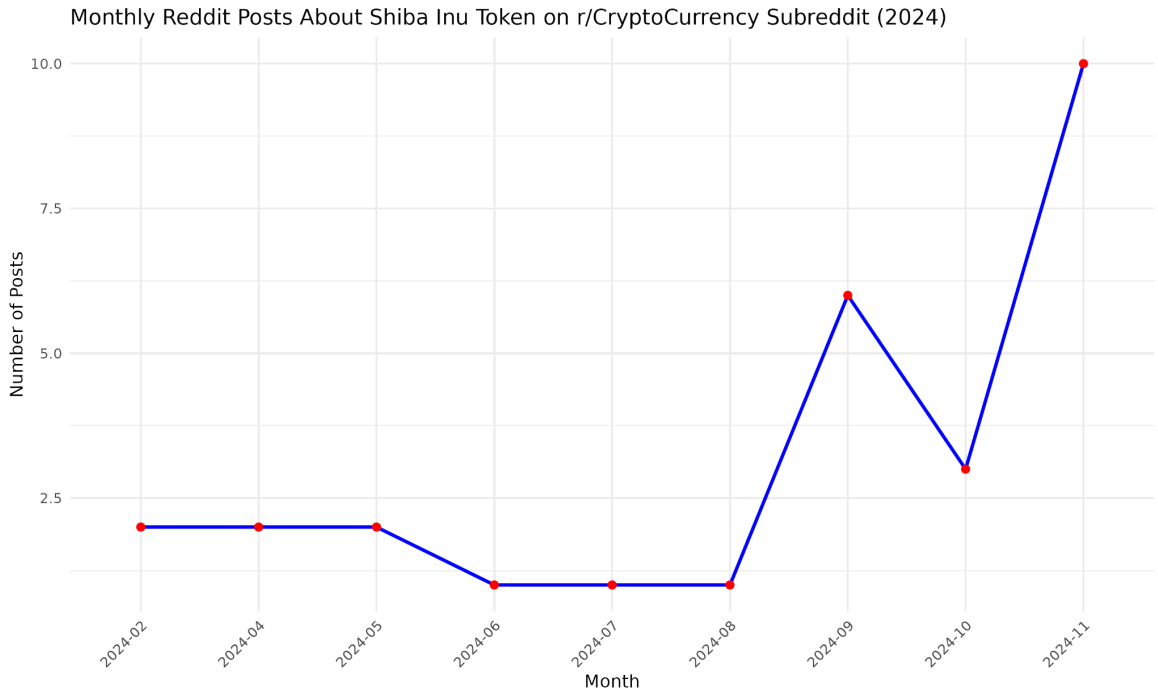

Figure 3: Figure 3 displays the monthly Reddit post activity regarding Shiba Inu (SHIB) in the r/CryptoCurrency subreddit for the year 2024. This subreddit is the most active cryptocurrency community on reddit. The y-axis shows the total number of posts per month and the x-axis is time. Each data point reflects the volume of discussions about SHIB during that month, with a notable surge in activity occurring in September and November 2024. This trend indicates increased community interest or significant market events surrounding SHIB during these periods. There may be more engagement across other platforms, but this paper only considers the data available on Reddit.

Daily price histories, trading volumes, and market capitalization from CoinGecko and graphs made using R Studio.

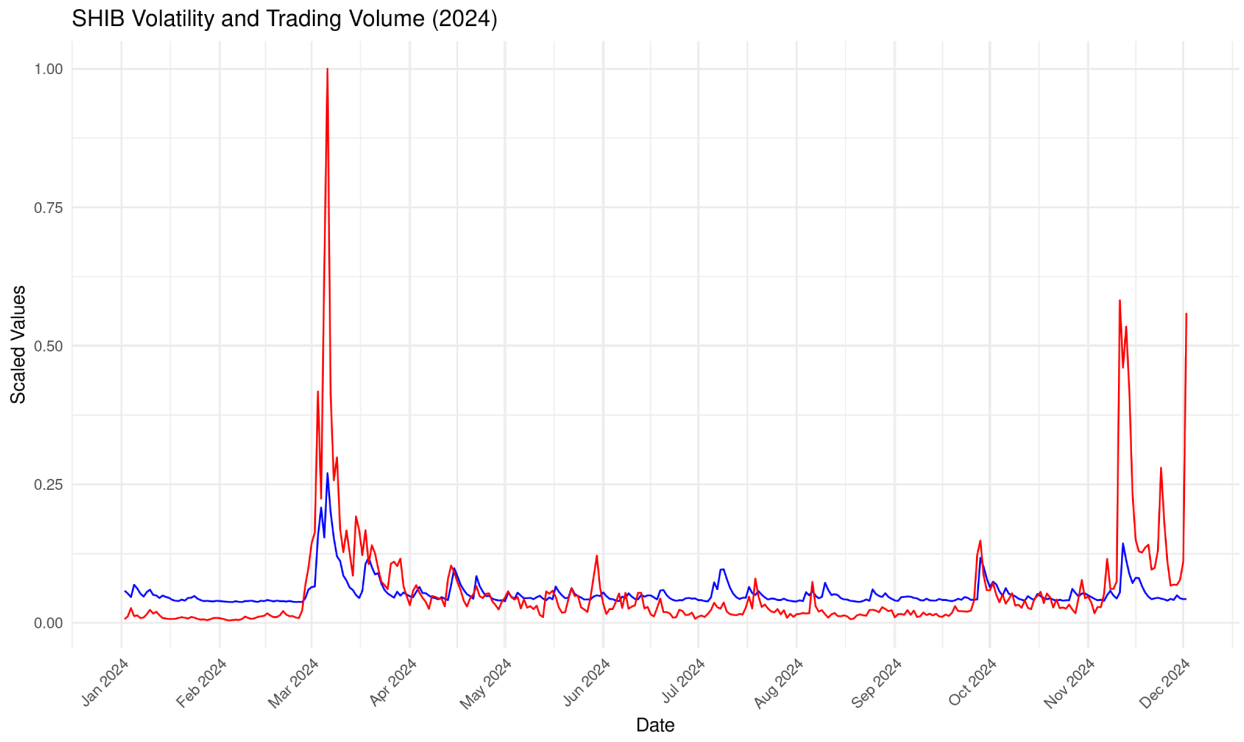

Figure 4: This chart illustrates the historical volatility of SHIB's returns (blue line) alongside its scaled trading volume (red line) for the year 2024. The y-axis represents the normalized values for both metrics, allowing for a direct comparison between volatility and trading volume trends. The x-axis spans the entire year of 2024.

Daily price histories, trading volumes, and market capitalization from CoinGecko and graphs made using R Studio.

Analysis of Data

The March-April 2024 surge in Shiba Inu's volatility, as observed in Figure 2, remains unexplained by the noise trader exploration through Fischer Black's framework. The alignment of heightened trading volume and volatility with the average SHIB community activity has some relation, although it doesn't fully explain the dramatic increase.

However, the increase in Reddit activity later on in the year as shown in Figure 3, results in more meaningful insights. Posts containing terms such as "moon" and "bullish" dominated the r/CryptoCurrency subreddit, reflecting the influence of social media sentiment on market behavior. Following this sentiment and engagement, the price demonstrates an increase. What's surprising is the volume of trades conducted. With the increase in Reddit posts during the month of November, the volume of trades of SHIB increased significantly. By combining engagement and Reddit discussions with GARCH-model volatility data, this research seeks to identify patterns that may link noise trader behavior with SHIB's price fluctuations. Although this shows some correlation, more factors, such as other platforms, influencers, or even planned pump-and-dump efforts, should be considered to determine to what extent Reddit activity or retail speculation influenced this surge.

Informational Cascades

One additional factor to consider with Shleifer's et al. work that helps better understand these sudden influxes of retail traders rallying around a cryptocurrency is discussed by Bikhchandani, Hirshleifer, and Welch, who describe how *informational cascades* occur when individuals disregard their private information and imitate others' actions, often resulting in fragile but widespread herd behavior.[9] Their paper discusses a framework that highlights that collective decision-making is not necessarily optimal; it depends heavily on the observed decisions of a few early adopters, often with little credible information. As the authors state, "the problem with cascades is that they prevent the aggregation of information of numerous individuals," leaving markets vulnerable to volatility and rapid reversals.[10]

When applied to SHIB, these insights clarify how cascading behavior amplifies the role of noise traders—those acting on irrelevant or speculative signals rather than fundamental data. For instance, Fischer Black's concept of noise trader risk posits that the unpredictability of such traders' beliefs adds substantial volatility into markets. Combining this with informational cascades reveals an interesting idea of a compounding effect: the initial actions of a few noise traders can catalyze a cascade, prompting uninformed participants to imitate their decisions, thereby magnifying volatility.

This dynamic can be observed in SHIB's market behavior. During significant surges, such as the March and November 2024, social media platforms like X and Reddit played a crucial role in creating cascades. Posts featuring phrases like "SHIB to the moon" acted as triggers for herd behavior, drawing in speculative retail traders and engagement from the

[9] Bikhchandani, Hirshleifer, and Welch, "A Theory of Fads." p. 992
[10] Bikhchandani, Hirshleifer, and Welch, "A Theory of Fads." p. 998

community. According to Bikhchandani et al., such cascades are inherently fragile.[11] Even small shocks—such as a tweet from a prominent influencer or a minor market correction—can shatter them, leading to abrupt reversals in price. Econometric evidence supports this behavioral framework. GARCH models of SHIB's price data, coupled with sentiment analysis of Reddit activity, indicate that spikes in social media engagement often coincide with periods of heightened volatility. For example, the notable surge in SHIB mentions in November 2024 reflects the cascading adoption driven by noise traders. This aligns with the cascading effect described by Bikhchandani et al., wherein "a few early individuals can have a disproportionate effect" on market outcomes.[12]

[11] Bikhchandani, Hirshleifer, and Welch, "A Theory of Fads." p. 993
[12] Bikhchandani, Hirshleifer, and Welch, "A Theory of Fads." p. 995

Shiba Inu’s surge in value demonstrates the impact of behavioral finance phenomena, including noise trading and informational cascades, on cryptocurrency markets. These surges reveal the susceptibility of crypto markets to social dynamics, where decisions can be driven by speculative behavior. By leveraging tools such as GARCH models and sentiment analysis, this research explored the role of noise trader risk and cascading behavior in fueling volatility and amplifying price changes in SHIB.

The findings highlight the influence of social media in shaping investor behavior, as platforms like Reddit demonstrated cascading effects through speculative sentiment and viral trends. The March and November 2024 surges in SHIB's value exemplify how noise traders and early adopters can disproportionately shape market outcomes, leading to fragile but significant shifts in valuation. These insights emphasize the importance of understanding the behavioral elements of cryptocurrency markets.

Ultimately, this research contributes to the broader scholarly conversation on the valuation of digital assets, illustrating how behavioral factors and social phenomenons diverge from traditional investment patterns. As cryptocurrency markets continue to evolve, recognizing and accounting for these behavioral patterns will be essential for a more structured and comprehensive understanding of their dynamics.

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